
Paspalum morichalense (Poaceae: Paniceae), a New Aquatic Species from South America

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ABSTRACT. *Paspalum morichalense* is described, illustrated, and compared to related species of the group Dissecta. It occurs in Venezuela, Surinam, Brazil, and Bolivia. Its confusion with *Paspalum commutatum* Nees and *Paspalum lacustre* Chase ex Swallen is discussed.

We have been aware for some time of the existence of a possibly undescribed, aquatic species of *Paspalum* L. However, because of its confusion with two other species, *P. commutatum* and *P. lacustre*, it was not possible to describe it until the types of those two names had been studied. *Paspalum* is a largely American genus with approximately 330 species. The group names used in this paper are the ones used by Chase (1929, ined.) in her infrageneric classification of the genus.

Paspalum morichalense Davidse, Zuloaga & Filgueiras, sp. nov. TYPE: Venezuela. Guárico: ca. 32 km SSE of Calabozo on Finca Becerra, in and around morichal with standing water, morichal dominated by *Mauritia flexuosa*, 65 m, 6 Nov. 1973, Davidse 3770 (holotype, MO; isotypes, AAU, K, LE, MEXU, MG, PRE, SI, US, VEN). Figure 1.

Gramen perenne, repens vel fluitans, aquaticum; culmi 13–25 cm alti, ramosi. Folia caulina; ligulae 0.6–2.0 mm longae, glabrae. Racemi 1–2, 3–6 cm longi; rachis 1.1–3.5 mm lata, alata, herbacea, scaberula. Spiculae 2.1–2.9 × 0.9–1.1 mm, ellipticae, singulares, non imbricatae, glabrae, acutae. Antherae 3, 0.5–0.8 mm longae, purpureae.

Creeping or floating, aquatic perennial. Culms many-noded, decumbent and rooting at the lower nodes, freely branching, the erect portion of the culms 13–25 cm tall; internodes hollow, glabrous; nodes dark, glabrous or sparsely pilose. Leaves cauline. Sheaths 2–8 cm long, glabrous, slightly

keeled; collar dark glabrous. Ligules 0.6–2.0 mm long, membranous, truncate, glabrous. Blades 3.5–11 cm long, 1.5–3 mm wide, linear to linear-lanceolate, flat, narrowed at the base, widely spreading to reflexed, glabrous to scabrous on the adaxial surface and glabrous on the abaxial surface, the margins scaberulous. Inflorescence terminal, partially included in the upper leaves; peduncle 2 cm long, cylindrical; racemes 1–2, 3–6 cm long; rachis 1.1–3.5 mm wide, winged, herbaceous, green, inconspicuously veined, glabrous, terminating in a spikelet, the margins minutely scaberulous, usually folded and partially embracing the spikelets, the spikelets not crowded, not overlapping on the same side of the rachis; pedicels solitary, 0.3–0.5 mm long, scaberulous. Spikelets 2.1–2.9 mm long, 0.9–1.1 mm wide, elliptic, concave-convex, broadly acute, whitish green, glabrous. Lower glume absent. Upper glume and lower lemma subequal or the upper glume 0.1–0.2 mm shorter than the upper floret, hyaline, 3–5-nerved, with one central nerve and with the submarginal and marginal nerves close together. Lower floret sterile. Lower lemma 5-nerved. Lower palea absent. Upper floret 2.1–2.8 mm long, 0.9–1.1 mm wide, as long as the spikelet, bisexual, elliptic, acute, whitish, indurate, smooth and shining, papillose and with prickle hairs and bicellular microhairs at the apex; lodicules 2, 0.3 mm long, truncate. Stamens 3; anthers 0.5–0.8 mm long, purple. Styles 2, separate; stigmas ca. ½ as long as the styles, plumose, purple. Caryopsis 1.6–1.8 mm long, 0.9 mm wide, elliptic, brownish; hilum ca. ⅔ as long as the caryopsis, linear; embryo ca. ⅓ as long as the caryopsis.

This species is known from Venezuela to Brazil and Bolivia. We have studied it in the field in Guárico, Venezuela, and Bahia, Brazil. In Guárico it grows on mud and in shallow water of swamps and

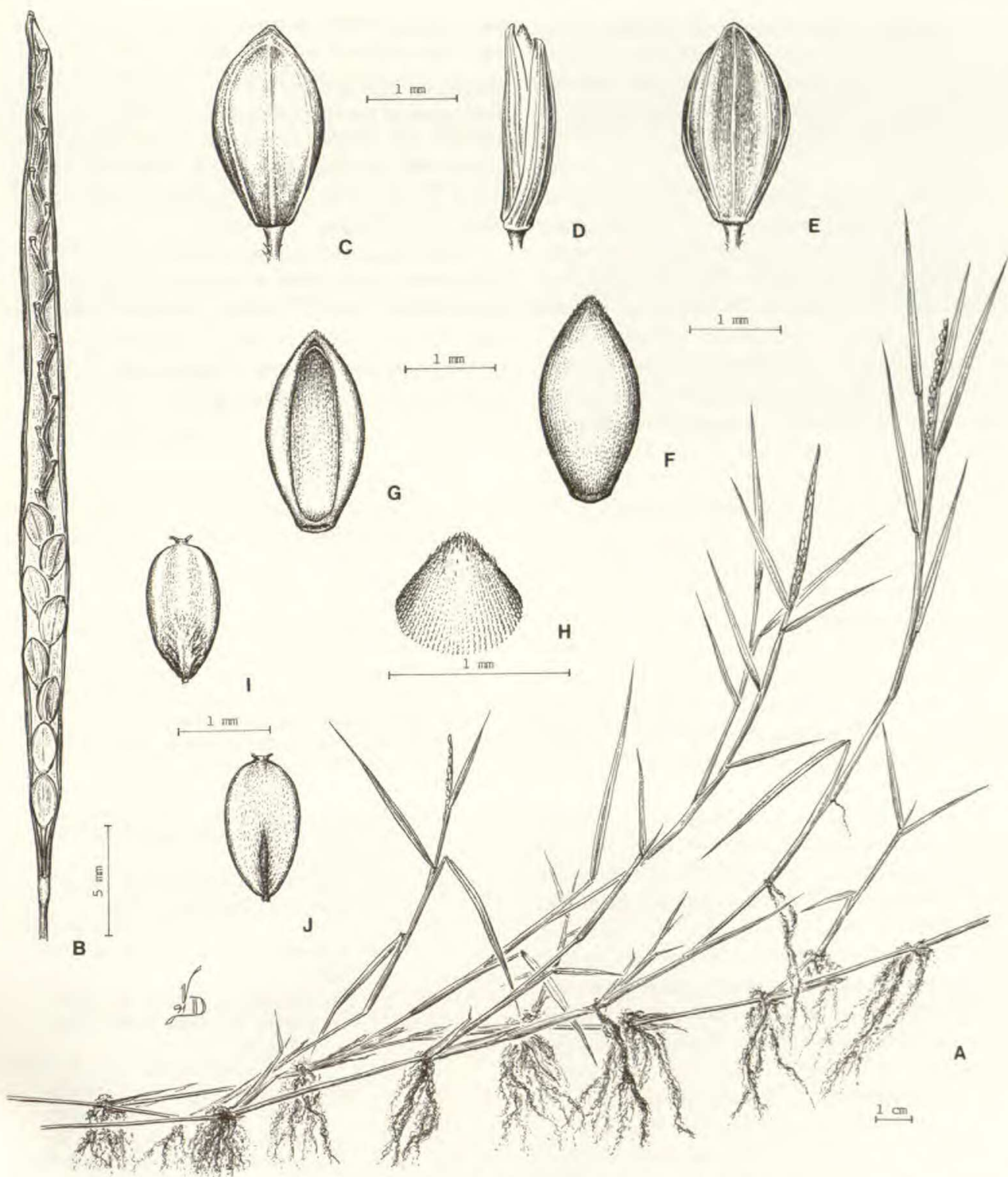


Figure 1. *Panicum morichalense* Davidse, Zuloaga & Filgueiras (Davidse 3770, MO). —A. Habit. —B. Inflorescence. —C. Spikelet, upper glume view. —D. Spikelet, lateral view. —E. Spikelet, lower lemma view. —F. Upper floret, lemma view. —G. Upper floret, palea view. —H. Detail of apex of the upper lemma. —I. Caryopsis, embryo side. —J. Caryopsis, hilum side.

ponds at an elevation between 65 and 125 m, especially in morichales, palm swamps dominated by *Mauritia flexuosa* L. f. (Arecaceae). The Bahian gathering was collected at an elevation of approximately 450 m in a pond ca. 20 m across and ca. 1–2 m deep. Here it grew at the edges and at the center of the pond and was much sought after by

cattle and horses. The latter entered into the deeper waters of the pond to reach the soft, floating culms.

The specific epithet is derived from the word morichal, which is the Venezuelan designation for a *Mauritia* swamp. The equivalent Brazilian vegetation type is commonly known as vereda.

Because of its few racemes, foliaceous, winged

rachis, aquatic habit, creeping or floating culms with many elongated nodes, and glabrous spikelets, *Paspalum morichalense* belongs to the informal group Dissecta of Chase (1929). Within this group it is most closely related to *P. lacustre* and *P. dissectum* (L.) L.

Paspalum lacustre differs from *P. morichalense* by its more numerous racemes (4–6 vs. 1–2), spikelets sharply acute (vs. broadly acute), the upper floret shorter than the upper glume and lower lemma (0.4–0.9 mm shorter vs. as long as or only 0.2 mm shorter), longer pedicels (ca. 1.0 mm vs. 0.3–0.5 mm), and rachis scabrous versus minutely scaberulous. *Paspalum lacustre* is known only from the type collection [BRAZIL. **Amapá:** Mun. Macapá, Ambé, localidade no afluente do Rio Pedreira, em lago fundo, 8 jul. 1951, R. L. Fróes & G. A. Black 27312 (holotype, INPA not seen, fragment US; isotype, US)].

Paspalum dissectum differs from *P. morichalense* in its more numerous racemes (2–4 vs. 1–2), spikelets generally smaller (1.8–2.2 × 1.2–1.5 vs. 2.1–2.9 × 0.9–1.1 mm), obovate (vs. elliptic), and more densely arranged (i.e., overlapping in the same row on one side of the rachis vs. not overlapping in one row), veins more strongly developed in the rachis wings, and the rachis wing margins scabrous (vs. minutely scaberulous).

Although specimens of *Paspalum morichalense* have been known at least since the 1864 collection of Warming in Brazil, the species has remained formally unrecognized until now and has been confused with two other species. As noted by Chase (ined.), Doell (1877) in *Flora Brasiliensis* partially misapplied the name *Paspalum commutatum*. Under this species he correctly cited a Riedel collection, but also included the Warming collection. *Paspalum commutatum*, as shown by an examination of a fragment of the holotype [BRAZIL: pr. Porto Est. locis tempore pluviore inundatis . . . Langsdorff s.n. (holotype, LE not seen, fragment US)], belongs to the group Plicatula of Chase (1929) because it has compressed sheaths, 4–5 racemes, broadly obovate spikelets, and a dark brown, shining upper floret. There is no close relationship between groups Dissecta and Plicatula.

As shown by her annotations and her unpublished manuscript, Chase (ined.) recognized that *P. morichalense* was an undescribed species, but she did not differentiate it from *P. lacustre*, a concept also followed by Judziewicz (1990). On the other hand, Swallen (1967), who effectively published *P. lacustre*, apparently did distinguish between *P. morichalense* and *P. lacustre*, since he cited only the type collection, Fróes & Black 27312, under his

new species. Unfortunately, he mistakenly classified this species as a member of the Plicatula group. In annotations of the US specimens Chase had equated the two collections of Fróes and Black (27195 and 27312) under the same, unpublished name. We, on the other hand, include Fróes & Black 27195 under *P. morichalense*, and Fróes & Black 27312 under *P. lacustre*.

As noted earlier, the description of *P. lacustre* in Judziewicz (1990: 484) is based on a mixture of *P. morichalense* and *P. lacustre*, but the illustration (fig. 84A–C) represents only *P. morichalense*.

These species of group Dissecta may be distinguished through the following key:

- 1a. Rachis of the raceme extending beyond the spikelets as a naked point.
 - 2a. Spikelets 0.6–0.8 mm wide, in 2 rows; United States to Argentina *P. repens* Bergius
 - 2b. Spikelets 0.8–1.2 mm wide, in 1 row; Mexico (Nayarit to Chiapas) *P. longicuspe* Nash
- 1b. Rachis ending in a spikelet.
 - 3a. Upper floret as long as the lower lemma and upper glume or at most 0.1–0.2 mm shorter; Venezuela, Surinam, Brazil, Bolivia *P. morichalense* Davidse, Zuloaga & Filgueiras
 - 3b. Upper floret at least 0.2 mm shorter than the lower lemma and upper glume.
 - 4a. Spikelets on the same side of the rachis not overlapping; Brazil (Amapá) *P. lacustre* Chase ex Swallen
 - 4b. Spikelets on the same side of the rachis overlapping, especially toward the base of the rachis.
 - 5a. Spikelets 1.8–2.2 mm long, obtuse; eastern United States, Cuba *P. dissectum* (L.) L.
 - 5b. Spikelets 3–3.9 mm long, acuminate.
 - 6a. Racemes 2, rarely 1; blades mostly 3–6 mm wide; Cuba, Jamaica *P. serratum* Hitchcock & Chase
 - 6b. Racemes 3–5, rarely 2; blades mostly more than 8 mm wide; southern United States to Argentina *P. acuminatum* Raddi

Paratypes. VENEZUELA. **Bolívar:** small swamp in open savanna at base of Serranía de Pijigao, 160 km SW of Caicara del Orinoco, 6°35'N, 66°45'W, 100–125 m, 12 Sep. 1985, Steyermark, Holst & Manara 131802 (MO, VEN). **Guárico:** 48 km N of Santa Rita along Hwy. 12 between Cabruta and Chagauramas, shallow pond with standing water in *Trachypogon* savanna with *Curatella* and *Bowdichia*, 110 m, 21 Nov. 1973, Davidse 4287 (COL, K, MO, P, RB, US, VEN). SURINAM. Sipaliwini, savannah, 30 Jan. 1965, Fraser 3 (US). BRAZIL. **Amapá:** Mun. de Macapá, Rio Macacoari, São Benedito do Braço, 4 Jan. 1951, Fróes & Black 27195 (US). **Bahia:** natante na lagoa Pipiri, Rio Santa Clara, 17 Dec. 1987, Filgueiras 1295 (CEN, IBGE, K, SP). **Minas Gerais:** Lagoa Santa, in aquis stagnantibus, fluitans, 5 Apr. 1864, Warming s.n. (US). **Mato Grosso:** just S of the Rio Suia Missu Ferry,

ca. 40 km NW of base camp at 12°49'S, 51°46'W, edge of small lake in shallow water, grass with weak procumbent rooting stems with ascending culms, 24 Nov. 1968, *Harley 11213* (MO, UB, US). **Mato Grosso do Sul:** Mun. de Corumbá, Fazenda Santa Delfina, erva prostrada, pouco arraigada ao solo, frequente em vazante seca, solo arenoso, 3 Dec. 1978, *Allem, Valls, Vieira & Comastri 2557* (CEN, MO); Mun. de Corumbá, Fazenda São Bento, erva prostrada, pouco arraigada ao solo, frequente em vazante seca, 2 Nov. 1978, *Allem, Valls, Vieira & Comastri 2529* (CEN, MO). **Pará:** Gavinho, Marajó Island, Mar. 1920, *Goeldi 284* (US). **BOLIVIA.** Río Guarapé, Santo Antonio de Manoelito, 25 Jun. 1952, *Black & Cordeiro 52-15320* (US).

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